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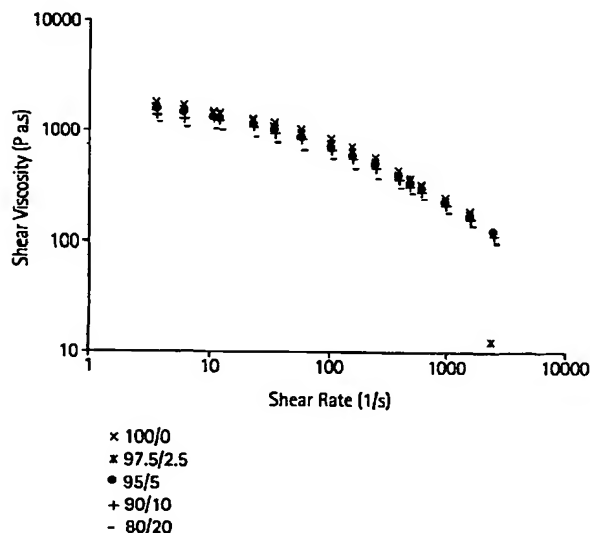
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TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, YU, ZA,
ZM, ZW.

[Continued on next page]

(54) Title: POLYMER COMPOSITIONS COMPRISING A LOW VISCOSITY, HOMOGENEOUSLY BRANCHED
ETHYLENE/ α -OLEFIN EXTENDER



(57) Abstract: A thermoplastic composition is described that comprises (i) from 1 to 99 percent by weight of the total composition of at least one thermoplastic copolymer, for example, styrene block copolymers, and (ii) from 1 to 99 percent by weight of the total composition of at least one homogeneously branched ethylene/ α -olefin interpolymers, for example ethylene/1-octene, having a density of less than or equal to 0.899 g/cc and a Brookfield viscosity of greater than 500 cP (350°F).

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/30434

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C08L23/04 C08L101/00 C08L53/02
/(C08L23/04,101:02),(C08L101/00,23:04)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C08L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 278 272 A (WILSON JOHN R ET AL) 11 January 1994 (1994-01-11) cited in the application abstract the whole document column 4, line 60 - column 5, line 6 column 17, line 652 - column 18; claims -----	1-8
X	WO 98/46694 A (JIALANELLA GARY LEE ;MCKEAND THOMAS J JR (US); SEHANOBISH KALYAN () 22 October 1998 (1998-10-22) abstract page 1, line 8 - line 20 page 2, lines 1-5 - lines 29-37 page 13, line 9 - line 33 page 16, line 11 - line 38 claims 3,4; examples ----- -/--	1-11

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/061981 A1 (DONALD ET AL.) 23 May 2002 (2002-05-23) abstract column 1, paragraph 6 column 5, paragraph 51 - paragraph 55 column 7, paragraph 72 - paragraph 76 column 8 - column 11 column 14, paragraph 169 - paragraph 170 -----	1-8
X	US 6 319 979 B1 (ALBRECHT STEVEN W ET AL) 20 November 2001 (2001-11-20) the whole document -----	1-8
X	WO 01/34719 A (FULLER H B LICENSING FINANC) 17 May 2001 (2001-05-17) the whole document -----	1-8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/30434

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1 - 11

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11 as referring to thermoplastic olefin polymers

a composition comprising a thermoplastic polyolefin (a) and an ethylene polymer (b) as claimed, articles produced thereof.

2. claims: 1-6,8 as referring to thermoplastic polycarbonates

a composition comprising a thermoplastic polycarbonate and (b) as claimed, articles produced thereof.

3. claims: 1-6,8 as referring to thermoplastic polyesters

a composition comprising a thermoplastic polyester and (b) as claimed, articles produced thereof.

4. claims: 1-6,8 as referring to thermoplastic polyurethanes

a composition comprising a thermoplastic polyurethane and (b) as claimed, articles produced thereof.

5. claims: 1-6,8 as referring to thermoplastic polyamides

a composition comprising a thermoplastic polyamide and (b) as claimed, articles produced thereof.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/30434

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5278272	A	11-01-1994	US 5272236 A	21-12-1993
			CA 2120766 A1	29-04-1993
			DE 9219090 U1	25-09-1997
			DE 9219173 U1	25-03-1999
			DE 69220077 D1	03-07-1997
			DE 69220077 T2	20-11-1997
			DE 69228265 D1	04-03-1999
			DE 69228265 T2	02-06-1999
			EP 0608369 A1	03-08-1994
			EP 0783006 A2	09-07-1997
			EP 0899278 A2	03-03-1999
			EP 0899279 A2	03-03-1999
			ES 2103976 T3	01-10-1997
			ES 2127030 T3	01-04-1999
			FI 941727 A	31-05-1994
			FI 20030362 A	11-03-2003
			JP 2963199 B2	12-10-1999
			JP 7500622 T	19-01-1995
			KR 262024 B1	15-07-2000
			KR 263803 B1	16-08-2000
			TW 448186 B	01-08-2001
			US 5395471 A	07-03-1995
			WO 9308221 A2	29-04-1993
			US 2003078357 A1	24-04-2003
			US 5582923 A	10-12-1996
			US 5674342 A	07-10-1997
			US 6534612 B1	18-03-2003
			US 5783638 A	21-07-1998
			US 5773155 A	30-06-1998
			US 6194532 B1	27-02-2001
			US 6448355 B1	10-09-2002
			US 6248851 B1	19-06-2001
			US 6506867 B1	14-01-2003
			US 6140442 A	31-10-2000
			US 6136937 A	24-10-2000
			US 5863665 A	26-01-1999
			US 6348555 B1	19-02-2002
			US 2002065384 A1	30-05-2002
			US 6111023 A	29-08-2000
			US 5986028 A	16-11-1999
			US 5380810 A	10-01-1995
			US 5427807 A	27-06-1995
			US 5562958 A	08-10-1996
			US 2003120004 A1	26-06-2003
			US 2003195320 A1	16-10-2003
			US 5525695 A	11-06-1996
			US 5685128 A	11-11-1997
			US 5591390 A	07-01-1997
			US 5595705 A	21-01-1997
			US 5852152 A	22-12-1998
WO 9846694	A	22-10-1998	AU 734093 B2	07-06-2001
			AU 6974298 A	11-11-1998
			BR 9808535 A	23-05-2000
			CA 2287075 A1	22-10-1998
			CN 1256705 T	14-06-2000
			EP 0975706 A1	02-02-2000
			JP 2001523280 T	20-11-2001

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/30434

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9846694	A	NO 994972 A PL 336165 A1 TW 401440 B US 6300398 B1 WO 9846694 A1 ZA 9803109 A	14-12-1999 05-06-2000 11-08-2000 09-10-2001 22-10-1998 14-10-1999
US 2002061981	A1 23-05-2002	US 2003119971 A1 US 6426390 B1 US 2001048991 A1 AT 265497 T AU 5588100 A BR 0012087 A CN 1355827 T DE 60010260 D1 EP 1189988 A1 JP 2003502471 T WO 0077095 A1 ZA 200108808 A AU 5148800 A AU 6615400 A BR 0012219 A BR 0013064 A CA 2377553 A1 CN 1142214 C CN 1365378 T CZ 20020339 A3 EP 1198516 A1 EP 1208157 A1 JP 2003502470 T JP 2003506513 T NO 20020407 A TW 506990 B US 2002147273 A1 WO 0077094 A1 WO 0109239 A1 US 2002061982 A1	26-06-2003 30-07-2002 06-12-2001 15-05-2004 02-01-2001 02-04-2002 26-06-2002 03-06-2004 27-03-2002 21-01-2003 21-12-2000 25-10-2002 02-01-2001 19-02-2001 07-05-2002 02-04-2002 08-02-2001 17-03-2004 21-08-2002 17-07-2002 24-04-2002 29-05-2002 21-01-2003 18-02-2003 26-03-2002 21-10-2002 10-10-2002 21-12-2000 08-02-2001 23-05-2002
US 6319979	B1 20-11-2001	AT 228554 T AU 3665797 A BR 9710552 A CA 2260954 A1 CN 1226280 A ,B DE 69717450 D1 DE 69717450 T2 EP 0912646 A1 ES 2187797 T3 ID 17001 A JP 2000515190 T NO 990253 A TR 9900106 T2 TW 442552 B WO 9803603 A1 US 6221448 B1 US 6107430 A ZA 9706431 A	15-12-2002 10-02-1998 17-08-1999 29-01-1998 18-08-1999 09-01-2003 10-07-2003 06-05-1999 16-06-2003 27-11-1997 14-11-2000 21-01-1999 21-04-1999 23-06-2001 29-01-1998 24-04-2001 22-08-2000 22-01-1999
WO 0134719	A 17-05-2001	WO 0134719 A1	17-05-2001

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